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### Sorghum and Soybean Production Guide: A Summary of Recommendations

Cooperative Extension South Dakota State University

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# **SORGHUM and SOYBEAN PRODUCTION GUIDE**

**Varieties  
Seeding Dates and Rates  
Fertilization  
Weed Control  
Insect Control  
Disease Control**

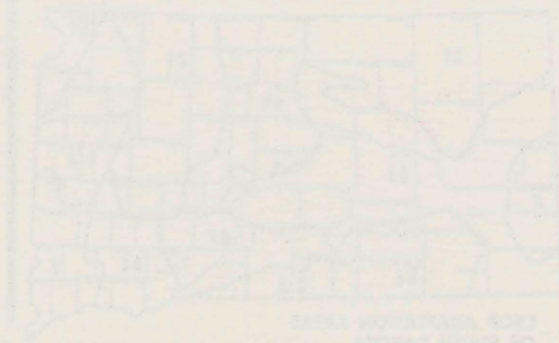
**Cooperative Extension Service  
South Dakota State University  
United States Department of Agriculture**

# SORGHUM and SOYBEAN PRODUCTION GUIDE

## A Summary of Recommendations

Varieties  
Seed Dates and Rates  
Fertilization

Weed Control  
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Disease Control





# SORGHUM AND SOYBEAN PRODUCTION GUIDE

CROP	VARIETY	AREA OF BEST ADAPTATION	SEEDING RATE	SEEDING DATE	CHEMICAL WEED CONTROL	REMARKS	DISEASE AND INSECT CONTROL	FERTILIZER																																																																																																																																																																																																																																																
Grain Sorghum	RS 608	C2, C3, D4, E	3-5 lb/A in low rainfall areas (4-7 seeds per foot of row) 4-6 lb/A in higher rainfall areas. (6-9 seeds per foot of row).	In warm soil May 15 to June 10	<table><tr><th>HERBICIDE</th><th>RATE LB/A</th><th>TIME OF APPLICATION</th></tr><tr><td colspan="3">BROAD-LEAVED WEEDS</td></tr><tr><td>2,4-D Amine</td><td>1/2</td><td>4-12 inches from ground to where new leaf is emerging.</td></tr><tr><td>2,4-D ester</td><td>1/2</td><td></td></tr><tr><td>2,4-D</td><td>1</td><td>After heading</td></tr><tr><td colspan="3">ANNUAL WEEDS</td></tr><tr><td>Atrazine</td><td>2-3</td><td>Postemergence before weeds are over 1 inch high or preemergence on medium to heavy soils. Must have 1/2 to 1 inch of rain within 2 1/2 to 3 weeks, carry-over will damage grain next year.</td></tr><tr><td>Propazine</td><td>2-3</td><td>Preemergence. Must have rain. Carry-over will damage grain.</td></tr><tr><td>Atrazine</td><td>1</td><td>Postemergence. Add 1 gal/A dormant spray oil and emulsifier to spray mix. Apply before weeds are over 1 inch high. Will minimize carry-over next year.</td></tr><tr><td>Norea (Herban)</td><td>2.4</td><td>Trial use. Needs moisture to activate chemical.</td></tr><tr><td>Atrazine+Norea</td><td>1+2</td><td></td></tr><tr><td>Propachlor (Ramrod)</td><td>4</td><td>(Annual grassy weeds) Pre-emergence. Needs less rain fall than Atrazine or CDAA-T. Dust from handling wettable powder may irritate eyes.</td></tr></table>	HERBICIDE	RATE LB/A	TIME OF APPLICATION	BROAD-LEAVED WEEDS			2,4-D Amine	1/2	4-12 inches from ground to where new leaf is emerging.	2,4-D ester	1/2		2,4-D	1	After heading	ANNUAL WEEDS			Atrazine	2-3	Postemergence before weeds are over 1 inch high or preemergence on medium to heavy soils. Must have 1/2 to 1 inch of rain within 2 1/2 to 3 weeks, carry-over will damage grain next year.	Propazine	2-3	Preemergence. Must have rain. Carry-over will damage grain.	Atrazine	1	Postemergence. Add 1 gal/A dormant spray oil and emulsifier to spray mix. Apply before weeds are over 1 inch high. Will minimize carry-over next year.	Norea (Herban)	2.4	Trial use. Needs moisture to activate chemical.	Atrazine+Norea	1+2		Propachlor (Ramrod)	4	(Annual grassy weeds) Pre-emergence. Needs less rain fall than Atrazine or CDAA-T. Dust from handling wettable powder may irritate eyes.	Adapted commercially developed sorghum hybrids are available. Some are superior to the varieties listed here. However, the policy of the South Dakota Agricultural Experiment Station does not permit it to recommend commercially developed crops or varieties. Yield and maturity information on some hybrids are available in the Sorghum Performance Trials report issued annually by SDSU.	<table><tr><th colspan="4">SORGHUM SEED TREATMENT</th></tr><tr><th>Fungicide</th><th>Rate</th><th>Formulation</th><th>Application Method</th></tr><tr><td>Arasan 50-Red</td><td>2 oz./bu.</td><td>Dust</td><td rowspan="2">Rotary or gravity treater</td></tr><tr><td>Ceresan M</td><td>1/2 oz./bu.</td><td>Dust</td></tr><tr><td></td><td>1 lb./gal. water</td><td>Dust</td><td>Slurry treater</td></tr><tr><td>Captan 75</td><td>1 1/2 oz./bu.</td><td>Dust</td><td rowspan="2">Rotary or gravity treater</td></tr><tr><td></td><td>1 1/2 oz./bu.</td><td>Dust</td></tr><tr><td></td><td>1 1/2 oz./bu.</td><td>Dust</td><td>Slurry treater</td></tr></table> <p><b>SORGHUM INSECTS</b></p> <p>Corn earworm in heads, fall armyworms and webworms, grasshoppers: Carbaryl (Sevin) 1 1/2 pounds per acre. Do not harvest for grain within 21 days; no time limitation for forage.</p> <p>Grasshoppers (grain sorghum only): Toxaphene 1 1/2 pounds per acre. Do not graze Toxaphene-treated forage with dairy animals or animals being finished for slaughter. Do not ensile treated forage. Do not apply more than once after heads start to form. Do not harvest within 28 days.</p>	SORGHUM SEED TREATMENT				Fungicide	Rate	Formulation	Application Method	Arasan 50-Red	2 oz./bu.	Dust	Rotary or gravity treater	Ceresan M	1/2 oz./bu.	Dust		1 lb./gal. water	Dust	Slurry treater	Captan 75	1 1/2 oz./bu.	Dust	Rotary or gravity treater		1 1/2 oz./bu.	Dust		1 1/2 oz./bu.	Dust	Slurry treater	<p>Use fertilizer to supplement nutrients in the soil; use more on soils of low fertility or in areas of higher rainfall. The majority of soils in South Dakota contain 2.5%-4% organic matter and 15-25 pounds of available phosphorus</p> <p><b>NITROGEN</b></p> <p>Table 1. Recommended Rates of Nitrogen Fertilizer</p> <table><tr><th>Map Area</th><th>Percent Organic Matter</th><th>Nitrogen (lb/A)</th></tr><tr><td>1</td><td>0-2.5</td><td>80-90</td></tr><tr><td></td><td>2.5-4</td><td>55-75</td></tr><tr><td></td><td>4 and over</td><td>0-45</td></tr><tr><td>2</td><td>0-2.5</td><td>75-80</td></tr><tr><td></td><td>2.5-4</td><td>50-65</td></tr><tr><td></td><td>4 and over</td><td>0-45</td></tr><tr><td>3</td><td>0-2.5</td><td>65-70</td></tr><tr><td></td><td>2.5-4</td><td>45-60</td></tr><tr><td></td><td>4 and over</td><td>0-40</td></tr><tr><td>4</td><td>0-2.5</td><td>55-60</td></tr><tr><td></td><td>2.5-4</td><td>40-50</td></tr><tr><td></td><td>4 and over</td><td>0-35</td></tr><tr><td>5</td><td>0-2.5</td><td>50-55</td></tr><tr><td></td><td>2.5-4</td><td>40-45</td></tr><tr><td></td><td>4 and over</td><td>0-35</td></tr><tr><td>6</td><td>0-2.5</td><td>45-50</td></tr><tr><td></td><td>2.5-4</td><td>35-40</td></tr><tr><td></td><td>4 and over</td><td>0-30</td></tr><tr><td>7</td><td>0-2.5</td><td>40-45</td></tr><tr><td></td><td>2.5-4</td><td>30-40</td></tr><tr><td></td><td>4 and over</td><td>0-30</td></tr><tr><td>8</td><td>0-2.5</td><td>35-40</td></tr><tr><td></td><td>2.5-4</td><td>30-35</td></tr><tr><td></td><td>4 and over</td><td>0-25</td></tr><tr><td>9</td><td>0-2.5</td><td>30-35</td></tr><tr><td></td><td>2.5-4</td><td>0-25</td></tr><tr><td></td><td>4 and over</td><td>0</td></tr></table> <p><b>PHOSPHORUS</b></p> <p>Table 2. Recommended Rates of Phosphorus</p> <table><tr><th>Available P (lb/A)</th><th>Rating</th><th colspan="4">Lb/A on areas 1-4 on map</th></tr><tr><th></th><th></th><th>Broadcast P<sub>2</sub>O<sub>5</sub></th><th>Starter P<sub>2</sub>O<sub>5</sub></th><th>P</th><th>P</th></tr><tr><td>0-5</td><td>Very low</td><td>60</td><td>26</td><td>30</td><td>13</td></tr><tr><td>5-15</td><td>Low</td><td>45</td><td>20</td><td>30</td><td>13</td></tr><tr><td>15-25</td><td>Medium</td><td>30</td><td>13</td><td>20</td><td>9</td></tr><tr><td>25 or over</td><td>High</td><td>0</td><td>0</td><td>0</td><td>0</td></tr></table> <p>Lb/A on areas 5-9 on map</p> <table><tr><td>0-5</td><td>Very low</td><td>45</td><td>20</td><td>30</td><td>13</td></tr><tr><td>5-15</td><td>Low</td><td>30</td><td>13</td><td>20</td><td>9</td></tr><tr><td>15-25</td><td>Medium</td><td>0</td><td>0</td><td>20</td><td>9</td></tr><tr><td>25 or over</td><td>High</td><td>0</td><td>0</td><td>0</td><td>0</td></tr></table> <p><b>POTASSIUM</b></p> <p>Table 3. Recommended Rates of Potassium</p> <table><tr><th>Potassium Soil Test</th><th>Rating</th><th colspan="4">Pounds/Acre</th></tr><tr><th></th><th></th><th>Broadcast K<sub>2</sub>O</th><th>K</th><th>Starter K<sub>2</sub>O</th><th>K</th></tr><tr><td>0-150</td><td>Low</td><td>60</td><td>50</td><td>30</td><td>25</td></tr><tr><td>150-250</td><td>Medium</td><td>0</td><td>0</td><td>20</td><td>17</td></tr><tr><td>250+</td><td>High</td><td>0</td><td>0</td><td>0</td><td>0</td></tr></table>	Map Area	Percent Organic Matter	Nitrogen (lb/A)	1	0-2.5	80-90		2.5-4	55-75		4 and over	0-45	2	0-2.5	75-80		2.5-4	50-65		4 and over	0-45	3	0-2.5	65-70		2.5-4	45-60		4 and over	0-40	4	0-2.5	55-60		2.5-4	40-50		4 and over	0-35	5	0-2.5	50-55		2.5-4	40-45		4 and over	0-35	6	0-2.5	45-50		2.5-4	35-40		4 and over	0-30	7	0-2.5	40-45		2.5-4	30-40		4 and over	0-30	8	0-2.5	35-40		2.5-4	30-35		4 and over	0-25	9	0-2.5	30-35		2.5-4	0-25		4 and over	0	Available P (lb/A)	Rating	Lb/A on areas 1-4 on map						Broadcast P <sub>2</sub> O <sub>5</sub>	Starter P <sub>2</sub> O <sub>5</sub>	P	P	0-5	Very low	60	26	30	13	5-15	Low	45	20	30	13	15-25	Medium	30	13	20	9	25 or over	High	0	0	0	0	0-5	Very low	45	20	30	13	5-15	Low	30	13	20	9	15-25	Medium	0	0	20	9	25 or over	High	0	0	0	0	Potassium Soil Test	Rating	Pounds/Acre						Broadcast K <sub>2</sub> O	K	Starter K <sub>2</sub> O	K	0-150	Low	60	50	30	25	150-250	Medium	0	0	20	17	250+	High	0	0	0	0
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Soybeans	Amsoy	D4, E	Solid-drilled: 120 lb/A (4 seeds per foot of row) 20-inch rows: 90 lb/A (10 seeds per foot of row) 30-inch rows: 75 lb/A (11 seeds per foot of row) 40-inch rows: 60 lb/A (12 seeds per foot of row)	Late May (right after corn is planted).	<table><tr><th>HERBICIDE</th><th>RATE LB/A</th><th>TIME OF APPLICATION</th></tr><tr><td colspan="3">ANNUAL WEEDS</td></tr><tr><td>Amiben</td><td>3</td><td>Pre-emergence; must have 1/2 inch of rainfall after treatment but before weeds emerge. Band application will reduce cost. Do not use on beans grown for hay or silage.</td></tr><tr><td>Trifluralin (Treflan)</td><td>1/2-1</td><td>Pre-emergence- light rates on light soils and heavy rates on heavy soils. Incorporate immediately after application to a depth of 2 to 4 inches with a disk harrow, harrow, or power driven rotary harrow. Isn't effective on cocklebur, velvet leaf and ragweed. Store above 40° F. Do not feed forage or let livestock graze treated field.</td></tr><tr><td colspan="3">GRASSY ANNUALS</td></tr><tr><td>CDAA (Randex)</td><td>4</td><td>Pre-emergence; must have 1/2 inch of rainfall within the first week after application. For several reasons granules may be preferred over sprays here. Band applications will reduce cost. Very irritating to skin and eyes, wear protective clothing.</td></tr><tr><td colspan="3">COCKLEBURS</td></tr><tr><td>4(2,4-DB) (Butyrac 175) or (Butoxone SB)</td><td>2-3 oz.</td><td>Apply 7 to 10 days before bloom. Use 1 gallon of 1.75 lb./gal. acid equivalent material applied to 10 acres of beans. Use 10 to 12 gals. spray solution per acre.</td></tr></table>	HERBICIDE	RATE LB/A	TIME OF APPLICATION	ANNUAL WEEDS			Amiben	3	Pre-emergence; must have 1/2 inch of rainfall after treatment but before weeds emerge. Band application will reduce cost. Do not use on beans grown for hay or silage.	Trifluralin (Treflan)	1/2-1	Pre-emergence- light rates on light soils and heavy rates on heavy soils. Incorporate immediately after application to a depth of 2 to 4 inches with a disk harrow, harrow, or power driven rotary harrow. Isn't effective on cocklebur, velvet leaf and ragweed. Store above 40° F. Do not feed forage or let livestock graze treated field.	GRASSY ANNUALS			CDAA (Randex)	4	Pre-emergence; must have 1/2 inch of rainfall within the first week after application. For several reasons granules may be preferred over sprays here. Band applications will reduce cost. Very irritating to skin and eyes, wear protective clothing.	COCKLEBURS			4(2,4-DB) (Butyrac 175) or (Butoxone SB)	2-3 oz.	Apply 7 to 10 days before bloom. Use 1 gallon of 1.75 lb./gal. acid equivalent material applied to 10 acres of beans. Use 10 to 12 gals. spray solution per acre.	Inoculate seed before planting. Corsoy is not recommended for northern counties of area D3. Ford and Wayne not recommended for northern counties of D4 and E.	<p><b>SOYBEAN INSECTS</b></p> <p>Grasshoppers: Carbaryl (Sevin) 1 1/2 pounds per acre, Malathion 1 pound per acre, Malathion low-volume concentrate 8 fluid ounces per acre; no limitations on Sevin. Do not apply Malathion spray within 1 day of harvest. Do not apply Malathion low-volume concentrate 8 ounce dosage within 7 days of harvest. Toxaphene 1 1/2 pounds per acre or Chlordane 1 pound per acre. Do not feed treated forage to dairy animals or animals being finished for slaughter; no restrictions on threshed beans.</p> <p>Corn earworms, green cloverworm: Carbaryl (Sevin) 1 1/2 pounds per acre. No pre-harvest limitations.</p> <p>Always follow label instructions and consult your county agent or extension entomologist when problems are encountered.</p> <div>Insecticides and herbicides can be poisonous; handle and store them with care. Be sure to read the label and follow the directions. Keep children and pets out of the area where chemicals are stored, mixed, or used. Do not contaminate feed, feed containers, or water troughs. Carefully clean all contaminated planting equipment. Destroy all emptied containers so they cannot be used for any purpose.</div>	<p>Use of trade name does not imply endorsement of one brand over another.</p> <p>Secure these Fact Sheets for more information on sorghum and soybean production:</p> <p>Grain Sorghum Production • Forage Sorghum Production • Weed Control in Sorghum • Soybeans • Weed Control in Soybeans</p>																																																																																																																																																																																																																								
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CROP ADAPTATION AREAS OF SOUTH DAKOTA



# SORGHUM and SOYBEAN PRODUCTION GUIDE

Varieties  
Seeding Dates and Rates  
Fertilization  
Weed Control  
Insect Control  
Disease Control



EXTENSION SERVICE  
U. S. DEPARTMENT OF AGRICULTURE  
SOUTH DAKOTA STATE UNIVERSITY  
BROOKINGS, SOUTH DAKOTA 57006  
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